Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Research paper

COVID-19-related direct and vicarious racial discrimination: Associations with psychological distress among U.S. college students

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ABSTRACT

Background: The COVID-19 pandemic has been accompanied by a myriad of racist incidents targeting minorities in the U.S. Young adults are susceptible to direct and vicarious (indirect) pandemic-related racial discrimination. We sought to examine associations between both types of discrimination experiences and psychological distress among college students across different racial groups.

Methods: We analyzed self-reported data from 64,041 undergraduate students from the Spring 2021 American College Health Association-National College Health Assessment. Logistic regression examined odds of severe distress based on self-reported exposure to direct and vicarious racial discrimination.

Results: Even after controlling for sociodemographic characteristics and prior mental health diagnoses, there was a significant association between direct discrimination and distress among Asian (AOR: 1.3, $p < 0.001$), Hispanic (AOR: 1.6, $p < 0.001$), and Multiracial (AOR: 1.4, $p < 0.001$) students. Vicarious discrimination was significantly associated with distress among White (AOR: 1.4, $p < 0.001$), Asian (AOR: 1.4, $p < 0.001$), Hispanic (AOR: 1.5, $p < 0.001$), and Multiracial (AOR: 1.3, $p < 0.001$) students. Further analysis considering distress as a continuous measure revealed a significant association between vicarious discrimination and distress for Black participants ($\beta = 0.9$, $p < 0.001$).

Limitations: Self-reported variables are susceptible to recall bias. Minority racial group analyses may be underpowered.

Conclusions: Our findings reveal an overall link between both direct and vicarious racial discrimination and distress across several racial groups. Further studies should examine effective mental health interventions and anti-racism initiatives to support students who have experienced direct or vicarious discrimination due to COVID-19.

1. Introduction

The COVID-19 pandemic has simultaneously highlighted and exacerbated adversities that have long plagued racial/ethnic minorities (Cheng and Conca-Cheng, 2020). A myriad of racist incidents targeting minority populations has accompanied the public health crisis (Ruiz et al., 2021). The Center for the Study of Hate and Extremism reported a 339 percent increase in anti-Asian hate crimes — including verbal harassment, shunning, and violence — nationally from 2020 to 2021 (Yam, 2022). A few of the most spotlighted incidents include the 2021 shootings of six Asian women in Atlanta (Taylor and Hauser, 2021), the murder of Michelle Go in January 2022, and the stabbing of Christina Yuna Lee nearly a month later (Southall et al., 2022). Numerous incidents of police brutality during the pandemic have also taken the lives of multiple Black individuals, reigniting the Black Lives Matter movement to end police violence and sparking national upheaval — most

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notably surrounding the death of George Floyd in 2020 (Ruiz et al., 2021).

The proliferation of racial hostility during the COVID-19 pandemic represents a recapitulation of previous xenophobic eruptions accompanying public health crises in the U.S. (Gover et al., 2020). Fear for one's health has been theorized to cultivate bias — particularly toward different racial groups — as an attempt to exert control over the threat of illness (Eichelberger, 2007; Muzzatti, 2005). Asian Americans in particular have historically been placed at the receiving end of discriminatory treatment. In 1900, Chinese Americans were forcibly quarantined and vaccinated when the bubonic plague emerged in San Francisco (Tansey, 2019). During the severe acute respiratory syndrome (SARS) epidemic in 2003, Asian businesses in NYC were shunned as sites of contagion (Eichelberger, 2007). Within the context of the COVID-19 pandemic and the politicized characterization of SARS-CoV2 as the "China virus," blame for the pandemic has largely been placed on Asian Americans (Gover et al., 2020). Furthermore, evidence from previously racialized incidents suggests that other racial groups may also be negatively affected by targeted discrimination of the AAPI community. Following the September 11 attacks (9/11), Arab and Muslim Americans were joined by other minority groups in reporting increases in discrimination, demonstrating the expansive nature of racism — even its most targeted forms (Rousseau et al., 2011).

The pandemic has largely intensified longstanding racial trauma for minority groups, both directly and vicariously. Direct racial discrimination describes an encounter in which an individual is the subject of a racially motivated attack, while vicarious discrimination encapsulates an experience in which one learns about or witnesses (i.e. in person, through social media, etc.) another person facing racism (Heard-Garris et al., 2018). Previous research shows that witnessing racism — especially when the victim is a loved one, an acquaintance, or of the same racial/ethnic group — is closely linked to psychological distress, anxiety, depression, and substance misuse (Chae et al., 2021; Holloway and Varner, 2021; Tao and Fisher, 2022). These findings suggest that witnessing attacks on one's racial group is linked to negative psychological repercussions beyond the immediate victim, perhaps explained by conceptual frameworks of racial identity such as "linked lives" and "common fate" (Mason et al., 2017).

Psychological ramifications of vicarious racial discrimination, however, have been shown to extend beyond those who share the same racial identity as the direct victim. Prior research has illustrated how observing a traumatic event — including racial violence — is associated with negative health outcomes, e.g., increased cortisol levels, elevated heart rate, and greater anxiety levels, regardless of whether the witness shares the same race as the victim (Trautmann et al., 2018). Neurobiological research suggests that shared neural networks are activated during both direct and vicarious experiences of trauma (Singer and Lamm, 2009; Zaki et al., 2016). Thus, witnessing racial discrimination vicariously may induce negative spillover effects on the observer, regardless of that individual's race.

During the COVID-19 pandemic, details surrounding incidents of pandemic-related racism have been shared through news and media outlets, exposing a wider audience to these traumatic encounters. As the use of virtual modes of communication has skyrocketed during the pandemic by necessity, social media arguably became the predominant avenue for learning about and witnessing acts of racial discrimination (Dubey, 2020; Wong et al., 2021). Multiple studies have shown a proliferation of racial slurs during the pandemic such as "kung-flu" and "chink" on social media platforms including Instagram and Twitter (Dubey, 2020; Tahmasbi et al., 2021).

College students — the vast majority of whom are active social media users — are susceptible to witnessing COVID-related racial discrimination, and have also been uniquely affected by the pandemic (Haddad et al., 2021). Over 60 % of university students nationwide reported experiencing mental health issues in the first years of the pandemic (2020–2021) — a nearly 50 % increase from 2013 (Lipson et al., 2022). Additionally, college students have reported increased levels of depression, anxiety, substance misuse, and self-harm behaviors linked to financial strain, infection, and loss of a loved one due to COVID (ElTohamy et al., 2022; Oh et al., 2022; Oh et al., 2021b; Oh et al., 2021c). Experiences of racial discrimination during the pandemic have also been associated with severe depression and psychotic episodes among college students (Oh et al., 2021a; Oh et al., 2021c).

Despite the growing literature demonstrating links between vicarious racial discrimination and mental health problems as well as the vulnerability of young adults to discrimination-related distress, studies examining the psychological impacts of COVID-19-related vicarious racial discrimination among college students are limited. Additionally, vicarious discrimination has been studied primarily within particular racial groups, including Black and Asian communities (Mason et al., 2017), but few studies have compared the mental health impacts of vicarious discrimination across multiple races.

The current study examines the association between self-reported experiences of direct and vicarious racial discrimination due to the COVID-19 pandemic and severe psychological distress, as measured by the Kessler Scale of Psychological Distress (K6), among U.S. college students representing five racial categories. Psychological distress is a dimensional measure that encompasses cognitive, behavioral, and emotional symptoms typically elevated in patients with anxiety, depression, or other mental disorders (Dyrbye et al., 2006; Kessler et al., 2002). We chose to study psychological distress over a more symptom-based measure or psychiatric syndrome given that it better captures the multidimensional effects of direct and vicarious discrimination faced by students during COVID-19 (Li et al., 2021; Son et al., 2020). We utilized data from the Spring 2021 American College Health Association-National College Health Assessment (ACHA-NCHA III) and sought to determine the degree to which either form of racial discrimination is linked to distress across multiple racial groups.

2. Methods

2.1. Data source and sample

Participants were drawn from the cross-sectional Spring 2021 ACHA-NCHA III. Students from 137 U.S. postsecondary institutions participated in the web-based survey (American College Health Association, 2021). To minimize sampling bias, institutions were required to either invite all of their students to participate or to invite a random sample of their students. The earliest data in the sample was collected in January 2021 and the latest was collected in early June 2021. The survey response rate was 13 %. The response rates for this dataset were on par with typically low response rates by university students (Fosnacht et al., 2017). All participants were de-identified for secondary data analysis. The current analysis was approved by the Institutional Review Board of Mass General Brigham.

This study focused on undergraduate students in the sample with available data on all measures described in this report. Consistent with prior research (Lin et al., 2021; Stevens et al., 2020), we eliminated respondents who reported implausible height and weight data (BMI above 65 or below 16; height above 210 cm or below 120 cm; weight above 180 kg or below 35 kg). The final sample used in this study included 64,041 participants.

2.2. Measures

2.2.1. Predictors

2.2.1.1. Direct and vicarious experiences of pandemic-related racial discrimination. Participants were asked to answer "yes" or "no" to the following questions: 1) "*As a result of the COVID-19 pandemic, have you experienced any discriminatory or hostile behavior due to your race/ethnicity*

(or what someone thought was your race/ethnicity)?" 2) "*As a result of the COVID-19 pandemic, have you witnessed (online exchanges or in-person) any discriminatory or hostile behavior or exchanges towards others due to their race/ethnicity, or what someone thought was their race/ethnicity?*"

2.2.2. Outcomes

2.2.2.1. Kessler Psychological Distress Scale. Respondents self-reported symptoms of non-specific emotional distress using the 6-item Kessler Psychological Distress Scale (K6; Kessler et al., 2003). This variable was assessed using the query, *"During the past 30 days, about how often did you feel…": 1) nervous, 2) hopeless, 3) restless or fidgety, 4) so sad nothing could cheer you up, 5) that everything was an effort, 6) worthless*. Each response option was recorded using a 5-category Likert scale: "*all of the time*", "*most of the time*", "*some of the time*", "*a little of the time*", and "*none of the time*." Results are scored using the unweighted sum of their answer choices, with "none of the time" equivalent to a "0" and "all of the time" equalling a "4".

We relied on total scores, which have a possible range of 0–24, as well as binary scores — with scores of 13 or above signifying nonspecific serious psychological distress (SPD). Scoring at or above this threshold indicates a probable mental health diagnosis based on DSM-IV criteria and significant functional impairment (Kessler et al., 2003; Kim et al., 2016). Scores were dichotomized such that 1 reflected an indication of serious psychological distress (≥13) and 0 as indicating no or low psychological distress (<13). Cronbach's alpha measure was 0.89, which indicated good reliability.

2.2.3. Covariates

Our study included the following covariates, detailed below: age, gender, sexual orientation, race/ethnicity, international/citizenship status, prior mental health diagnoses, financial hardship due to the COVID-19 pandemic, and loss of a loved one to COVID-19.

2.2.3.1. Sociodemographic characteristics. Our study controlled for various sociodemographic characteristics. Participants' ages were categorized into two groups: young adults ("18–24 years") and older adults ("25+ years").

Participants' self-reported gender was utilized. Students who selected "woman or female" were coded as female and those who selected "man or male" were coded as male. Students who selected other gender identities were categorized as other.

There were seven options in the survey for sexual orientation: "Straight/Heterosexual," "Bisexual," "Gay," "Lesbian," "Pansexual," "Queer," "Questioning," and self-identified. Students' responses were recoded into four categories including "Straight," "Gay/Lesbian," "Bisexual," and "Other". The "Other" category included students who selected "Pansexual," "Queer," "Questioning," or self-identified.

Respondents were coded as international students if they answered "yes" to the survey question regarding whether they needed a visa for work or study in the United States.

2.2.3.2. Race/ethnicity. Race/ethnicity was coded based on participants' responses to the item "*How do you usually describe yourself? (Please select all that apply)*." The options for this item were as follows: "White," "Black or African American," "Hispanic or Latino/a/x," "Asian or Asian American," "American Indian or Native Alaskan," "Middle Eastern/North African (MENA) or Arab Origin," "Native Hawaiian or Other Pacific Islander Native," "Biracial or Multiracial," and "My identity is not listed above (please specify)." To create mutually exclusive categories of race/ethnicity, we coded those who selected multiple options and those who selected only "Biracial or Multiracial" as "Multiracial." Participants who listed a self-identified group were coded into the "Other" category. Respondents who selected only one option were coded as the selected identity. Racial groups with <1000 participants were not included in the analysis, which resulted in the following racial categories: White, Asian, Black, Hispanic, and Multiracial.

2.2.3.3. Prior mental health diagnoses. Participants were asked to mark "yes" or "no" to the following query: "*Have you ever been diagnosed by a healthcare or mental health professional with any of the following ongoing or chronic conditions?*" Options for mental health diagnoses included ADD/ADHD, alcohol and other drug-related abuse or addiction, anxiety, autism spectrum disorder, bipolar disorder, depression, eating disorders, gambling disorder, insomnia, OCD, PTSD, schizophrenia, Tourette's, and traumatic brain injury.

2.2.3.4. Financial hardship due to COVID-19. Students indicated the effect of the COVID-19 pandemic on their financial situation using a 5-point Likert scale. Response options ranged from "A lot more stressful" to "A lot less stressful", with the intermediate option indicating "No significant change" to students' financial situations. Students who selected "A lot more stressful" and those who chose "Somewhat more stressful" were coded as "Yes, experienced financial hardship." Those who selected "No change in my level of stress," "Somewhat decreased my level of stress," or "Significantly decreased my level of stress" were categorized as "No, did not experience hardship."

2.2.3.5. Loss of a loved one due to COVID-19. Students were asked to respond "yes" or "no" to an item asking whether someone close to them (a loved one, close family member, or friend) had died due to COVID-19.

2.3. Data analysis

Data analysis was performed using STATA V17 (StataCorp, 2021). To ensure data integrity, observations with implausible values on height, weight, or body mass index variables were dropped (<1 %). Descriptive, univariate analyses were run to provide the demographic characteristics in Table 1. We also assessed the proportions of the sample who experienced direct and vicarious racial discrimination as well as relative K6

Table 1
Sociodemographic characteristics of ACHA-NCHA III participants during the COVID-19 pandemic, Spring 2021 (N = 64,041).

Characteristics	N	%
Age (year)		
18–24	56,145	87.7
≥25	7896	12.3
Gender		
Male	17,821	27.8
Female	43,746	68.3
Other	2474	3.9
Race/ethnicity		
White	34,530	53.9
Asian	8970	14.0
Black	2046	3.2
Hispanic	10,131	15.8
Multiracial	8364	13.1
Sexual orientation		
Straight	47,925	74.8
Gay/lesbian	7755	12.1
Bisexual	2626	4.1
Other	5735	9.0
International		
No	60,283	94.1
Yes	3758	5.9
Mental health dx		
No	39,483	61.7
Yes	24,558	38.3
Financial hardship due to COVID-19		
No	23,604	36.9
Yes	40,437	63.1
Death of a loved one due to COVID-19		
No	53,517	83.6
Yes	10,524	16.4

outcomes. We stratified these results by race. Regression models were used to test the association between direct and vicarious discrimination and distress. Cluster-robust standard errors were used to account for the possibility that observations within each institution are not independent. We reported the logistic regression results for each of the covariates, racial discrimination predictors, and K6 outcomes. As well, we reported the linear regression results for the predictors and K6 outcomes. We ran interaction tests between vicarious discrimination and race, and between direct discrimination and race. Given the large sample size and number of comparisons, a conservative significance level of $p < 0.01$ and a 99 % confidence interval is reported in this study. This approach was chosen over others, e.g., the Bonferroni correction, to balance the risk of type I versus type II errors.

3. Results

Table 1 presents descriptive characteristics of the overall sample, which consisted of 64,041 total participants. Approximately 88 % of included participants were between the ages of 18 and 24. Females comprised about 68 % of the sample, and nearly 75 % identified as straight. White students comprised the largest racial group in the sample (53.9 %), followed by Hispanic (15.8 %), Asian (14.0 %), Multiracial (13.1 %), and Black (3.2 %) participants. International students comprised <6 % of the sample. Nearly 40 % of respondents reported having a previous mental health diagnosis. Approximately 63 % of participants experienced financial hardship due to the pandemic, while 16 % lost a loved one to COVID-19.

Table 2 presents the proportion of students who reported experiencing direct or vicarious discrimination as a result of the COVID-19 pandemic and the sample's K6 scores, stratified by race. Among the total sample, 9 % reported experiencing direct discrimination, while almost half (45.9 %) reported witnessing some form of discrimination or hostile behavior toward others due to race. 26.1 % scored a 13 or greater on the K6, indicating severe distress.

Here we highlight key patterns in our results. Among Asian participants, 32.5 % reported experiencing direct racial discrimination due to the COVID-19 pandemic, in comparison to approximately 2 to 15 % of respondents among the remaining racial categories. Asian participants also reported the highest percentage of vicarious discrimination due to the COVID-19 pandemic (68.4 %), followed by Black (54.6 %), Multiracial (53.0 %), Hispanic (51.7 %), and White (36.1 %) participants.

The percentage of scores at or above the K6 clinical threshold for severe psychological distress ranged from 24.1 % - 29.6 % across racial groups, with Multiracial participants representing the highest percentage.

Table 3 presents unadjusted and adjusted odds ratios for severe psychological distress, predicted by direct and vicarious discrimination. The first adjusted model controls for the alternate discrimination variable. The second adjusted model controls for the alternate discrimination variable, as well as age, gender, race/ethnicity, sexual orientation, international student status, prior mental health diagnosis, financial hardship due to the pandemic, and loss of a loved one to COVID-19.

Table 3
Key odds ratio and confidence intervals for ACHA-NCHA III participants' discrimination experiences.

Predictors	Psychological distress Unadjusted OR (99 % CI)	Psychological distress Adjusted OR[a] (99 % CI)	Psychological distress Adjusted OR[b] (99 % CI)
Direct discrimination	1.733** (1.613–1.862)	1.315** (1.219–1.419)	1.403** (1.332–1.478)
Vicarious discrimination	1.965** (1.857–2.080)	1.880** (1.772–1.995)	1.449** (1.396–1.505)

[a] Adjusted for alternate discrimination form.
[b] Adjusted for alternate discrimination form, age, gender, sexual orientation, race/ethnicity, international/citizenship status, prior mental health diagnoses, financial hardship due to the COVID-19 pandemic, and loss of a loved one to COVID-19.
** $p < 0.001$.

We discuss the adjusted models here. After adjusting for vicarious discrimination experiences, participants who reported direct discrimination had a nearly 32 % increased risk of exhibiting distress (AOR: 1.3, $p < 0.001$). When controlling for direct discrimination, those who reported vicarious discrimination were nearly 90 % more likely to exhibit distress (AOR: 1.9, $p < 0.001$). After also controlling for additional covariates, there remained a similarly significant association between severe psychological distress and both direct (AOR: 1.4; $p < 0.001$) and vicarious (AOR: 1.4, $p < 0.001$) racial discrimination.

To test the interaction effects between race and both discrimination forms, we conducted a subanalysis assessing the global significance of these interaction terms. Both interaction terms for race and direct discrimination ($p = 0.014$) and race and vicarious discrimination ($p = 0.002$) were statistically significant within a global interaction test. Thus, the relationships between both discrimination forms and distress differed significantly across racial groups.

Table 4 summarizes the odds of severe psychological distress separately for each racial group, predicted by reported exposure to COVID-19-related direct and vicarious discrimination. We report the adjusted model here. After adjusting for all covariates (including the alternate discrimination form), the association between direct discrimination and distress was significant for Asian (AOR: 1.3, $p < 0.001$), Hispanic (AOR: 1.6, $p < 0.001$), and Multiracial (AOR: 1.4, $p < 0.001$) respondents. Vicarious discrimination significantly predicted distress among White (AOR: 1.4, $p < 0.001$), Asian (AOR: 1.4, $p < 0.001$), Hispanic (AOR: 1.5, $p < 0.001$), and Multiracial (AOR: 1.3, $p < 0.001$) participants in the adjusted model. Black participants did not exhibit significant distress associated with either direct or vicarious discrimination.

As logistic regression relies on a binary outcome signified by the K6 clinical cutoff, we ran a linear regression as a sensitivity analysis, particularly to better understand why significant associations between either discrimination form and psychological distress were not observed among Black participants. Vicarious racial discrimination significantly predicted increases in distress among Black participants ($\beta = 0.9$, $p < 0.001$). However, direct discrimination did not contribute significantly

Table 2
Key predictor and outcome variable characteristics of ACHA-NCHA III participants, Spring 2021 (N = 64,041).

Factors	Total (N = 64,041)		White (n = 34,530)		Asian (n = 8970)		Black (n = 2046)		Hispanic (n = 10,131)		Multiracial (n = 8364)	
	N	%	N	%[a]	N	%	N	%	N	%	N	%
Discrimination												
Direct	5926	9.3	748	2.2	2919	32.5	307	15.0	914	9.0	1038	12.4
Vicarious	29,383	45.9	12,454	36.1	6139	68.4	1116	54.6	5239	51.7	4435	53.0
Kessler-6												
<13	47,330	73.9	26,199	75.9	6494	72.4	1515	74.0	7231	71.4	5891	70.4
≥13	16,711	26.1	8331	24.1	2476	27.6	533	26.0	2900	28.6	2473	29.6

[a] Percentage reflects portion within particular group reporting outcome.

Table 4
Keys odds ratio and confidence intervals for ACHA-NCHA III participants' discrimination experiences, stratified by race.

	Psychological Distress Unadjusted & adjusted OR (99 % CI)				
	White (n = 34,530)	Asian (n = 8970)	Black (n = 2046)	Hispanic (n = 10,131)	Multiracial (n = 8364)
Predictors[a]					
Direct discrimination	0.886 (0.726–1.081)	1.494** (1.288–1.733)	1.098 (0.770–1.566)	1.671** (1.374–2.032)	1.585** (1.348–1.864)
Vicarious discrimination	2.013** (1.864–2.175)	1.626** (1.414–1.870)	1.526** (1.225–1.899)	1.892** (1.711–2.093)	1.715** (1.500–1.961)
Adjusted predictors[b]					
Direct discrimination	1.165 (0.949–1.430)	1.267** (1.087–1.478)	1.027 (0.685–1.540)	1.573** (1.277–1.937)	1.429** (1.208–1.690)
Vicarious discrimination	1.366** (1.268–1.472)	1.365** (1.178–1.581)	1.167 (0.928–1.465)	1.492** (1.345–1.656)	1.299** (1.137–1.484)

[a] Adjusted for alternate discrimination form.
[b] Adjusted for alternate discrimination form, age, gender, sexual orientation, international student status, prior mental health diagnoses, financial hardship due to COVID-19, and loss of a loved one to COVID-19.
** $p < 0.001$.

to increases in distress levels, ($\beta = 0.4$, $p = 0.248$). The associations between both discrimination forms and distress remained similar for each of the remaining racial groups as previously found in the logistic regression.

4. Discussion

Our results reveal a high prevalence of direct and vicarious racial discrimination experiences due to the COVID-19 pandemic within an undergraduate student sample (9.3 % and 45.9 %, respectively). The rates were particularly elevated across minority groups: more than half of respondents within Asian, Black, Hispanic, and Multiracial groups reported witnessing discriminatory behavior toward others due to COVID-19. Participants who reported experiencing vicarious discrimination were 45 % more likely to exhibit distress, even after controlling for relevant sociodemographic characteristics. These findings speak to the ubiquity of discrimination within the social and political climate of the pandemic (Strassle et al., 2022). Additionally, while negative mental health outcomes have been previously linked to direct and vicarious experiences of racial discrimination (Wofford et al., 2019), our study extends prior literature by demonstrating how both discrimination forms — attributed specifically to COVID-19 — may contribute to distress among young adults within the context of this public health crisis.

Asian participants reported the highest rates of both direct and vicarious racial discrimination due to COVID-19. Even after controlling for covariates, Asian participants who experienced direct discrimination had a nearly 30 % increased likelihood of exhibiting distress, while those who faced vicarious discrimination were 40 % more likely to exhibit distress. This result was expected given the dramatic uptick in anti-Asian violence associated with bigoted statements linking this racial group with the spread of COVID-19 (Ruiz et al., 2021; Yam, 2022), as well as literature showing that AAPI university students who faced pandemic-related discrimination exhibited greater odds of depression, anxiety, binge drinking, and suicidal ideation (Fisher et al., 2021; Zhou et al., 2021). Experiences of vicarious discrimination among Asian Americans during the pandemic — including hearing about racist incidents on the news or from a family member or partner — have been linked with depression, anxiety, and negative affective reactions including avoidance and hopelessness (Chae et al., 2021; Hahm et al., 2021). Thus, our findings add to the growing literature emphasizing the harmful psychological ramifications of direct and vicarious discrimination among Asian Americans.

We also found a significant association between both types of discrimination and distress among Multiracial respondents. Approximately 25 % of Multiracial participants selected Asian as one of their racial identities, which may explain these findings given the victimization of this particular group during the pandemic. Additionally, prior research shows that racism toward this group stems both from general discrimination akin to monoracial individuals as well as forms of discrimination that uniquely target Multiracial individuals (Franco et al., 2021). Multiracial individuals often face racial miscategorization when confronted with discrimination, depriving these individuals of a potential psychological buffer in having a strong identification with one's racial group (Jackson et al., 2012). These additive effects may explain the increased psychological toll of direct discrimination among Multiracial individuals. While the literature on Multiracial experiences with vicarious discrimination is lacking, a prior study noted that witnessing discrimination toward family members was associated with negative mental health outcomes among this group (Franco et al., 2021).

The Black community has served as a wide target of devastating forms of racism throughout American history, and the COVID-19 pandemic has provided no exception to this status. Multiple studies have demonstrated how racism exacerbated by the pandemic — notably in the forms of police brutality, and reduced economic opportunities — has predicted negative mental health outcomes among Black individuals (Garcia et al., 2020; Egede and Walker, 2020). However, our study found that Black participants exhibited the lowest risk of psychological distress associated with direct racial discrimination specifically due to the COVID-19 pandemic.

One explanation for these findings may lie within the structure of our study's discrimination measures. First, both discrimination queries are single-item measures and may serve as crude assessments of discrimination experiences. Additionally, the framing of these queries focuses on a specific subset of racial discrimination related to the pandemic. In other words, direct racial discrimination specifically attributed to the spread of COVID-19 (which our study centers upon) and racism that occurs during the pandemic may serve as a qualitatively different experience. Within the public sphere, blame for COVID-19 has largely been cast on Asian individuals, potentially resulting in Black participants interpreting these queries as discrimination pertaining particularly to Asians. Such attributions may be more or less distressing for Black participants in our study, depending on how participants interpret what constitutes discrimination due to COVID-19.

Our results may also illuminate underlying complexities surrounding how Black communities respond to discrimination. Multiple studies have highlighted lower rates of depression and anxiety among Black individuals compared to White individuals — despite greater physical health mortality, social inequality, and discrimination rates among the former (Keyes, 2009; Louie et al., 2022; Thomas Tobin et al., 2022). Termed the Black-White mental health paradox, this phenomenon has been closely tied to racial coping mechanisms (e.g. preparation for bias, enhanced family social support, racial socialization) developed in response to longstanding racial trauma among Black communities, which have been shown to reduce the impact of discrimination on anxiety and depression (Brenner et al., 2018; Louie et al., 2022; Neblett Jr. et al., 2008; Reynolds and Gonzales-Backen, 2017). Thus, the insignificant associations between direct pandemic-related discrimination and distress among Black participants in our study may reflect enduring racism deeply embedded in the Black experience and attendant coping

mechanisms adopted out of the necessity to preserve and maintain psychological well-being.

While our logistic regression found an insignificant association between vicarious discrimination and distress among Black participants, reanalysis considering distress as a continuous measure found a positive association. This finding concords with prior literature, including a study which showed that witnessing another individual experiencing racism during the pandemic is linked to greater depressive symptoms among Black observers (Chae et al., 2021). Our logistic regression results may suggest that the K6 clinical threshold for severe psychological distress — when treated as a binary outcome — may not be sufficiently sensitive to distress associated with vicarious discrimination. Thus, this measure may fail to capture the full extent to which Black individuals are affected when witnessing pandemic-related racial discrimination.

Our study showed that 752 White participants (2.2 % of the sample) reported experiencing direct racial discrimination due to COVID-19. White respondents who experienced direct discrimination exhibited significantly greater odds of reporting distress compared to those who did not. These results are consistent with previous findings, including a 2017 poll conducted by the Harvard T.H. Chan School of Public Health where 55 % of White Americans said they believed anti-White discrimination is prevalent in the U.S. (Datz, 2017). Additionally, a previous study showed that, when comparing Black and White participant responses, White respondents perceived similar amounts of discrimination between the two groups (Earle and Hodson, 2020). One possible explanation for the significant results seen in our study may be that some White individuals interpret increased advocacy efforts countering White supremacy as forms of reverse discrimination — resulting in associated distress among this group.

Our results showed a significant association between reporting vicarious discrimination and distress among White participants after controlling for covariates. Given the prevalence of racial discrimination toward minority populations during the pandemic, this finding suggests that, in accordance with prior literature, negative mental health outcomes can affect members of any racial group after witnessing discriminatory attacks, including on another racial group (Rousseau et al., 2011).

5. Limitations

Results must be interpreted within the context of the study design, and certain limitations exist. All data are self-reported and subject to recall and interpretation bias. Additionally, while institutions require either all students or a random subset to participate in the ACHA-NCHA survey, there may be systematic differences between students who elect to participate and those who do not. The lack of available non-response data limits survey weighting techniques.

We were unable to control for various pandemic-related stressors (e.g., isolation levels, sudden academic transitions, etc.) which may contribute to distress. Our sample is also composed primarily of White, heterosexual, women and may not fully capture the experiences of individuals who may face multiple forms of discrimination (e.g., discrimination due to both sexual orientation and racial identity). Analyses may be underpowered for Black participants (3 % of the sample). Additionally, reports have demonstrated inconsistent data regarding cross-cultural/cross-racial sensitivity and comparability of the K6, which may limit interpretations of mental health data gathered using this measure (Stolk et al., 2014).

The survey items measuring both direct and vicarious discrimination fail to capture the nature and setting of each incident and cannot account for potential differences in the severity of each experience. Our vicarious discrimination item does not specify whether the discrimination was against someone of the same race as the respondent, limiting our interpretations of such data. Our measures also fail to account for pre-pandemic discrimination levels which may differ across the racial groups in our study.

Both predictors and outcome variables were measured simultaneously in this cross-sectional study, limiting causal inference. Future studies should assess the longitudinal effects of direct and vicarious discrimination on mental health outcomes.

6. Conclusion/implications

Our findings suggest the importance of examining the effects of both direct and vicarious racial discrimination on mental health outcomes among U.S. college students during the pandemic. These data also highlight the need to further understand the unique experiences of various racial groups to different forms of discrimination, and to bolster and expand anti-racism efforts.

Institutions should work to develop and disseminate relevant mental health resources geared toward understanding and addressing the discriminatory experiences of various racial minorities. Colleges may consider devoting resources to cross-racial conversations surrounding discrimination and mental health. One example is the Courageous Conversations initiative at Boston College, which holds regular listening and dialogue sessions surrounding issues of racial justice for campus members of various racial identities (Smith, 2021). While further research is needed to evaluate the effectiveness of such initiatives, these implementations serve as a promising start for addressing issues of racism and mental health within the college setting.

Additional resources should also be directed toward providing enhanced psychological support for students (regardless of race) who have reported witnessing discrimination toward another individual or group due to the COVID-19 pandemic. Resources could include instituting and enhancing university-based systems for reporting racist incidents, offering counseling sessions for processing vicarious discrimination experiences, and ensuring open accessibility and knowledge of these resources to all students (Jeung et al., 2021).

Along with supporting victims of direct and vicarious discrimination, universities should strengthen and expand initiatives dedicated to ultimately eliminating racism. One example is Southern Illinois University's Antiracism, Diversity, Equity, and Inclusion Certificate programs, which cover topics including strategies for effective allyship, addressing hate speech, and effective cross-cultural communication (O'Malley, 2022). Institutions should also promote broader anti-racism efforts spearheaded by local community groups and existing student cultural organizations (e.g., Stop Asian Hate/Black Lives Matter open forums, racial justice demonstrations, etc.). Universities should devote necessary funding and material support to ensure that such initiatives are accessible to all community members.

Our findings highlight the prevalence and psychological impact of both direct and vicarious pandemic-related discrimination among college students. To address this pertinent issue, universities should provide enhanced support systems for affected individuals and promote initiatives to combat both forms of racial discrimination within and beyond the college campus.

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IRB approval status

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Reprint requests

Cindy H. Liu, Ph.D.

CRediT authorship contribution statement

Anjeli R. Macaranas contributed to the conceptualization, formal analysis, investigation, and writing of the manuscript. Abdelrahman ElTohamy contributed to the conceptualization, formal analysis, methodology, and writing of the manuscript. Sunah Hyun contributed to the conceptualization, formal analysis, and writing of the manuscript. David H. Chae contributed to the methodology, writing, reviewing, and editing of the manuscript. Courtney Stevens contributed to the conceptualization, data curation, methodology, writing, reviewing, and editing of the manuscript. Justin A. Chen contributed to the conceptualization, data curation, writing, reviewing, and editing of the manuscript. Cindy H. Liu contributed to the conceptualization, data curation, formal analysis, funding acquisition, project administration, resources, supervision, writing, reviewing, and editing of the manuscript.

Conflict of interest

We report no conflicts of interest for any author.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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